

*Systematic review: new rheumatic immune-mediated inflammatory diseases (R-IMiDs) after SARS CoV-2 vaccinations*

30 May 20

**Search strategies**

**A.1 Medline**

Ovid MEDLINE(R) ALL <1946 to May 24, 2023> Results per line

Date: 25/05/2023

1	exp Arthritis, Rheumatoid/	125199
2	exp Axial Spondyloarthritis/	16644
3	Spondylitis, Ankylosing/	16422
4	Arthritis, Reactive/	4060
5	Arthritis, Psoriatic/	8022
6	exp Crystal Arthropathies/	15744
7	exp Gout/	13865
8	exp Chondrocalcinosis/	2235
9	exp Connective Tissue Diseases/	346656
10	Antiphospholipid Syndrome/	9262
11	exp Lupus Erythematosus, Systemic/	66856
12	Sjogren's Syndrome/	14563
13	exp Scleroderma, Systemic/	23012
14	exp Myositis/	22425
15	Dermatomyositis/	9030
16	Polymyositis/	2723
17	Still's Disease, Adult-Onset/	1683
18	exp Anti-Neutrophil Cytoplasmic Antibody-Associated Vasculitis/	12278
19	Granulomatosis with Polyangiitis/	7812
20	exp Microscopic Polyangiitis/	733
21	Polyarteritis Nodosa/	6230
22	Takayasu Arteritis/	4594
23	Giant Cell Arteritis/	7470

24	Polymyalgia Rheumatica/	2792
25	Polychondritis, Relapsing/	1526
26	exp Sarcoidosis/	26956
27	Behcet Syndrome/	10054
28	IgA Vasculitis/	4935
29	Cryoglobulinemia/	3330
30	Cogan Syndrome/	258
31	Immunoglobulin G4-Related Disease/	1190
32	(rheumatic immune mediated inflammatory diseases or R-IMID\$ or Inflammatory arthritis or rheumatoid arthritis or Axial Spondyloarthritis or ankylosing spondylitis or reactive arthritis or psoriatic arthritis or crystal arthritis or gout or pseudogout or chondrocalcinosis or "remitting seronegative symmetrical synovitis with pitting oedema" or "remitting seronegative symmetrical synovitis with pitting edema" or connective tissue disease\$ or CTD or anti-phospholipid syndrome or (systemic lupus erythematosus or SLE) or lupus or (systemic sclerosis or scleroderma) or inflammatory myopathy or myositis or dermatomyositis or polymyositis or necrotizing autoimmune myopathy or anti-synthetase syndrome or adult-onset stills disease or Anti-Neutrophil Cytoplasmic Antibody-Associated Vasculitis or ANCA associated vasculitis or "Granulomatosis with polyangiitis" or "Eosinophilic granulomatosis with polyangiitis" or microscopic polyangiitis or Polyarteritis Nodosa or large vessel vasculitis or Takayasu\$ arteritis or Giant Cell Arteritis or medium vessel vasculitis or small vessel vasculitis or polymyalgia rheumatica or relapsing polychondritis or sarcoidosis or bechet\$ disease or behcet\$ syndrome or IgA Vasculitis or Henoch-Schoenlein purpura or Cryoglobulinemia\$ or cogan\$ syndrome or Immunoglobulin G4-Related Disease or "IgG4 disease").mp.	
33	or/1-32	571738
34	exp COVID-19 Vaccines/	21269
35	(chadox1 ncov-19 or ad26covs1 or 2019-ncov vaccine mrna-1273 or bnt162 vaccine).mp.	
		4809
36	(SARS CoV-2 vaccin\$ or Pfizer-Bio-N-tech or Pfizer or Moderna or AstraZeneca or Covishield or Covaxin or Sputnik V or Sinovac or Sinopharm or Corona Vac or Corona virus disease-19 vaccine).mp.	
		14729
37	((coronavirus\$ or 2019nCoV\$ or 19nCoV\$ or "2019 novel\$" or Ncov\$ or "n-cov" or "SARS-CoV-2\$" or "SARSCoV-2\$" or SARSCoV2\$ or "SARS-CoV2\$" or "severe acute respiratory syndrome\$" or COVID\$2) adj3 vaccin\$).mp.	
		36392
38	or/34-37	42535
39	33 and 38	1101
40	(new-onset or new presentation or newly presenting or newly presented or new diagnosis or newly diagnosed or newly developed or "linked with" or "linked to" or associated or post or following or after or "connected to" or "connected with").mp.	
		11300844
41	39 and 40	870

42	exp Animals/	26382900
43	Humans/	21259566
44	42 not 43	5123334
45	41 not 44	869

## A.2 Embase

Embase <1974 to 2023 May 24> Results per line

Date: 25/05/2023

1	exp rheumatoid arthritis/	237322
2	exp axial spondyloarthritis/	32894
3	ankylosing spondylitis/	31670
4	reactive arthritis/	4034
5	psoriatic arthritis/	30756
6	exp crystal arthropathy/	26613
7	gout/	25732
8	pseudogout/	1267
9	exp connective tissue disease/	531232
10	exp antiphospholipid syndrome/	20529
11	exp systemic lupus erythematosus/	110160
12	lupus vulgaris/	3387
13	Sjogren syndrome/	27760
14	exp systemic sclerosis/	36983
15	exp scleroderma/	54045
16	exp myositis/	47381
17	exp dermatomyositis/	19335
18	polymyositis/	9699
19	adult onset Still disease/	2985
20	exp ANCA associated vasculitis/	27412
21	Wegener granulomatosis/	15078
22	microscopic polyangiitis/	4132
23	polyarteritis nodosa/	7175
24	aortic arch syndrome/	3515
25	exp giant cell arteritis/	13587
26	rheumatic polymyalgia/	6715
27	relapsing polychondritis/	2385

- 28 exp sarcoidosis/46457
- 29 Behcet disease/17454
- 30 anaphylactoid purpura/ 7486
- 31 cryoglobulinemia/ 7289
- 32 Cogan syndrome/ 843
- 33 immunoglobulin G4 related disease/ 5099
- 34 (rheumatic immune mediated inflammatory diseases or R-IMID\$ or Inflammatory arthritis or rheumatoid arthritis or Axial Spondyloarthritis or ankylosing spondylitis or reactive arthritis or psoriatic arthritis or crystal arthritis or gout or pseudogout or chondrocalcinosis or "remitting seronegative symmetrical synovitis with pitting oedema" or "remitting seronegative symmetrical synovitis with pitting edema" or connective tissue disease\$ or CTD or anti-phospholipid syndrome or (systemic lupus erythematosus or SLE) or lupus or (systemic sclerosis or scleroderma) or inflammatory myopathy or myositis or dermatomyositis or polymyositis or necrotizing autoimmune myopathy or anti-synthetase syndrome or adult-onset stills disease or Anti-Neutrophil Cytoplasmic Antibody-Associated Vasculitis or ANCA associated vasculitis or "Granulomatosis with polyangiitis" or wegener Granulomatosis or "Eosinophilic granulomatosis with polyangiitis" or microscopic polyangiitis or Polyarteritis Nodosa or large vessel vasculitis or Takayasu\$ arteritis or aortic arch syndrome or Giant Cell Arteritis or medium vessel vasculitis or small vessel vasculitis or polymyalgia rheumatica or relapsing polychondritis or sarcoidosis or bechet\$ disease or behcet\$ syndrome or IgA Vasculitis or anaphylactoid purpura or Henoch-Schoenlein purpura or Cryoglobulinemia\$ or cogan\$ syndrome or immunoglobulin G4 related disease or "IgG4 disease").mp. 691340
- 35 or/1-34 786726
- 36 exp SARS-CoV-2 vaccine/ 36598
- 37 (chadox1 ncov-19 or ad26covs1 or 2019-ncov vaccine mrna-1273 or bnt162 vaccine).mp. 1814
- 38 (SARS CoV-2 vaccin\$ or Pfizer-Bio-N-tech or Pfizer or Moderna or AstraZeneca or Covishield or Covaxin or Sputnik V or Sinovac or Sinopharm or Corona Vac or "Corona virus disease-19 vaccine").mp. 102617
- 39 ((coronavirus\$ or 2019nCoV\$ or 19nCoV\$ or "2019 novel\$" or Ncov\$ or "n-cov" or "SARS-CoV-2\$" or "SARSCoV-2\$" or SARSCoV2\$ or "SARS-CoV2\$" or "severe acute respiratory syndrome\$" or COVID\$2) adj3 vaccin\$).mp. 49387
- 40 or/36-39 119683
- 41 35 and 40 4194
- 42 (new-onset or new presentation or newly presenting or newly presented or new diagnosis or newly diagnosed or newly developed or "linked with" or "linked to" or associated or post or following or after or "connected to" or "connected with").mp. 15220564
- 43 41 and 42 2610
- 44 limit 43 to human 2493

45	exp conference paper/	2709759
46	conference.pt.	5548357
47	or/45-46	5570726
48	44 not 47	1821

### A.3 Cochrane

Cochrane Central Register of Controlled Trials (CENTRAL) and Cochrane Database of Systematic Reviews (CDSR) Results per line

Date: 30/05/2023

#1	MeSH descriptor: [Arthritis, Rheumatoid] explode all trees	7283
#2	MeSH descriptor: [Axial Spondyloarthritis] explode all trees	847
#3	MeSH descriptor: [Spondylitis, Ankylosing] this term only	823
#4	MeSH descriptor: [Arthritis, Reactive] this term only	46
#5	MeSH descriptor: [Arthritis, Psoriatic] this term only	633
#6	MeSH descriptor: [Crystal Arthropathies] explode all trees	682
#7	MeSH descriptor: [Gout] explode all trees	656
#8	MeSH descriptor: [Chondrocalcinosis] explode all trees	26
#9	MeSH descriptor: [Connective Tissue Diseases] explode all trees	12087
#10	MeSH descriptor: [Antiphospholipid Syndrome] this term only	138
#11	MeSH descriptor: [Lupus Erythematosus, Systemic] explode all trees	1420
#12	MeSH descriptor: [Sjogren's Syndrome] this term only	362
#13	MeSH descriptor: [Scleroderma, Systemic] explode all trees	716
#14	MeSH descriptor: [Myositis] explode all trees	316
#15	MeSH descriptor: [Dermatomyositis] this term only	138
#16	MeSH descriptor: [Polymyositis] this term only	60
#17	MeSH descriptor: [Still's Disease, Adult-Onset] this term only	12
#18	MeSH descriptor: [Anti-Neutrophil Cytoplasmic Antibody-Associated Vasculitis] explode all trees	232
#19	MeSH descriptor: [Granulomatosis with Polyangiitis] this term only	107
#20	MeSH descriptor: [Microscopic Polyangiitis] explode all trees	63
#21	MeSH descriptor: [Polyarteritis Nodosa] this term only	40
#22	MeSH descriptor: [Takayasu Arteritis] this term only	43
#23	MeSH descriptor: [Giant Cell Arteritis] this term only	140
#24	MeSH descriptor: [Polymyalgia Rheumatica] this term only	105
#25	MeSH descriptor: [Polychondritis, Relapsing] this term only	1
#26	MeSH descriptor: [Sarcoidosis] explode all trees	306
#27	MeSH descriptor: [Behcet Syndrome] this term only	150

- #28 MeSH descriptor: [IgA Vasculitis] this term only 46
- #29 MeSH descriptor: [Cryoglobulinemia] this term only 41
- #30 MeSH descriptor: [Cogan Syndrome] this term only 8
- #31 MeSH descriptor: [Immunoglobulin G4-Related Disease] this term only 13
- #32 "rheumatic immune mediated inflammatory diseases" or R-IMID or R-IMIDs or "Inflammatory arthritis" or "rheumatoid arthritis" or "Axial Spondyloarthritis" or "ankylosing spondylitis" or "reactive arthritis" or "psoriatic arthritis" or "crystal arthritis" or gout or pseudogout or chondrocalcinosis or "remitting seronegative symmetrical synovitis with pitting oedema" or "remitting seronegative symmetrical synovitis with pitting edema" or "connective tissue" NEXT disease\* or CTD26811
- #33 "anti-phospholipid syndrome" or "systemic lupus erythematosus" or SLE or lupus or "systemic sclerosis" or scleroderma or "inflammatory myopathy" or myositis or dermatomyositis or polymyositis or "necrotizing autoimmune myopathy" or "anti-synthetase syndrome" or "adult-onset stills disease" or "Anti-Neutrophil Cytoplasmic Antibody Associated Vasculitis" or "ANCA associated vasculitis" 7731
- #34 "Granulomatosis with polyangiitis" or "Eosinophilic granulomatosis with polyangiitis" or "microscopic polyangiitis" or "Polyarteritis Nodosa" or "large vessel vasculitis" or Takayasu\* NEXT arteritis or "Giant Cell Arteritis" or "medium vessel vasculitis" or "small vessel vasculitis" or "polymyalgia rheumatica" or "relapsing polychondritis" or sarcoidosis or Bechet\* NEXT disease or Behcet\* NEXT syndrome or "IgA Vasculitis" or "Henoch-Schoenlein purpura" or Cryoglobulinemia\* or cogan NEXT syndrome or "Immunoglobulin G4-Related Disease" or "IgG4 disease" 2167
- #35 {or #1-#34} 38485
- #36 MeSH descriptor: [COVID-19 Vaccines] explode all trees 409
- #37 "chadox1 ncov-19" or ad26covs1 or "2019-ncov vaccine mrna-1273" or "bnt162 vaccine" 90
- #38 "SARS CoV-2" NEXT vaccin\* or Pfizer-Bio-N-tech or Pfizer or Moderna or AstraZeneca or Covishield or Covaxin or Sputnik V or Sinovac or Sinopharm or "Corona Vac" or "Corona virus disease-19 vaccine" 7733
- #39 (coronavirus\* or 2019nCoV\* or 19nCoV\* or Ncov\* or n-cov or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or "severe acute respiratory" NEXT syndrome\* or COVID) NEAR/3 vaccin\* 1808
- #40 {or #36-#39} 9169
- #41 #35 and #40 456
- #42 new-onset or new presentation or newly presenting or newly presented or new diagnosis or newly diagnosed or newly developed or "linked with" or "linked to" or associated or post or following or after or "connected to" or "connected with" 1137116
- #43 #41 and #42 in Cochrane Reviews, Cochrane Protocols and Trials 384

#### **A.4 LitCovid**

LitCovid Results

Date: 30/05/2023

("connective tissue disease" OR rheumatic OR arthritis) AND (new-onset OR new presentation OR newly presenting OR newly presented OR new diagnosis OR newly diagnosed OR newly developed OR "linked with" OR "linked to" OR associated OR post OR following OR after OR "connected to" OR "connected with") AND (vaccine OR vaccination)

~510

#### **A.5 Google Scholar**

Google Scholar Results

Date: 30/05/2023

("new onset" OR newly) AND ("connective tissue diseases" OR rheumatic OR arthritis) AND (associated OR post OR following OR after) AND (covid OR SARS) AND vaccination -medline -embase

Limited to 2019 onwards

~14,100

#### **A.6 Manual search**

Date: 09/06/2023